During a recent 'Growing an Energy Cluster' conference, Idaho Sen. Mike Crapo and INL's Steve Aumeier said America needs to move toward a broader energy portfolio that includes renewable energy resources and hybrid energy systems.

Aumeier tells conference to 'rethink' energy systems

by Keith Arterburn, *INL Communications*

"The greatest danger in times of turbulence is not the turbulence; it is to act with yesterday's logic."

With this quote from famed business theorist and consultant Peter Drucker, Idaho National Laboratory's Steven Aumeier opened a recent presentation on hybrid energy systems. He addressed more than 100 participants at the "Growing an Energy Cluster" conference Nov. 6 in Idaho Falls.

INL's Steven Aumeier noted that Idaho must 'rethink' its energy systems.

"We must rethink our approaches to energy because energy markets have changed, easily accessible energy is dwindling and energy security is becoming critical," said Aumeier, INL's director of Energy Systems and Technologies.

Idaho Sen. Mike Crapo opened the conference and Aumeier spoke afterward, affirming many of Crapo's comments. They emphasized that the country must expand renewable energy, develop new energy systems through extensive research and transition from carbon-based fuels to these new systems.

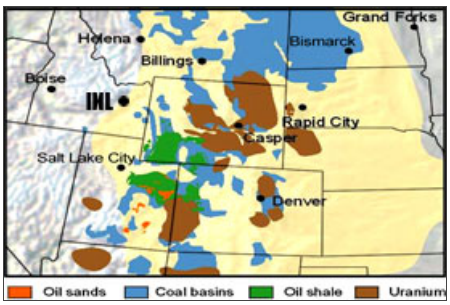
"We do not have a shortage of energy resources," Aumeier said, citing current global energy capacities continent by continent. "Rather, we have a shortage of 'smart' energy systems."

Aumeier used a map of western North America to show energy resources stretching from northern Alberta past southern Colorado. The resources include oil sands, coal basins, oil shale, uranium and rich renewable resources.

"Energy resources in the Western Energy Corridor far surpass those of known oil reserves in the Middle East," he said.

To unlock domestic energy resources, 'smart' energy systems need to be far more efficient, he said. They could combine a variety of sources to form hybrid energy systems, rather than focusing on the dominant fossil energy system of today. Systems that leverage combinations of biorefineries, carbon capture technology, nuclear-produced electricity and hydrogen, and synthetic fuel production could offer both transportation fuel and an expanding economy with many new jobs.

Aumeier illustrated his point by explaining how 65 percent of carbon is wasted in a "traditional coal-to-liquids" energy system. However, a "nuclear hybrid coal-to-liquids" design would convert more than 95 percent of the carbon into usable products, he said.



A map of resources in the Western Energy Corridor. (Click on the map above to expand the image.)

A nuclear hybrid energy system also would simultaneously support transportation fuels and electricity production. It includes a nuclear power plant, high-temperature electrolysis to make hydrogen, synthetic fuel production and coal combined with carbon capture technology. These systems in combination use 70 percent less coal, capture carbon dioxide, convert more than 95 percent of the carbon into energy products and emit little carbon dioxide, he said.

And such systems would create a stronger energy security profile, which includes secure resources, economic stability and environmentally sustainable energy sources.

For Idaho's energy future, Aumeier emphasized that "rethinking" means considering the state's significant wind energy potential and the tremendous amount of biomass energy in its agricultural production and forestry materials.

He pointed to the research agreement INL signed in September with the Idaho Farm Bureau Federation to pursue dedicated energy crop research during the next several years. On Oct. 28, INL also signed a five-year agreement with the

state of Idaho to collaborate on pursuing "stable, secure, affordable and environmentally responsible energy resources" for the state and nation.

"We need to secure our energy future and simultaneously build a strong economic opportunity for Idaho and the region by ‘rethinking' energy systems and combining them in ways that produce low-carbon intensity and use domestic resources," he said.

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